

WHAT IS CLAIMED IS:

1. A sole for a boot, especially a sports boot, said sole comprising:
a front portion and a rear portion more rigid in longitudinal bending than the front portion,
at least one reinforcement in said two portions,
wherein:

the front portion comprises a front half-sole affixed to the reinforcement;

the rear portion comprises a rear half-sole affixed to the reinforcement; and

the front and rear half-soles are assembled to one another in a junction zone, preferably, by cementing and/or riveting and/or welding.

2. A sole according to claim 1, wherein the limit between the flexible front portion and the rigid rear portion is located substantially at the rear of the so-called metatarsophalangeal bending zone.

3. A sole according to claim 1, wherein the two front and rear half-soles overlap one another in the junction zone and wherein the length of the junction zone is adjustable depending on the size.

4. A sole according to claim 3, wherein the rear half-sole (seen from the bottom) overlaps the front half-sole in the junction zone.

5. A sole according to claim 1, wherein the junction/overlapping zone is located in and/or behind the so-called metatarsophalangeal bending zone.

6. A sole according to claim 1, wherein it includes a reinforcement constituted by at least one laminated or non-laminated plate extending from the junction zone, both on at least half of the front portion and on at least half of the rear portion.

7. A sole according to claim 1, wherein the reinforcement has a length corresponding substantially to at least 60%, preferably at least 70% and even more preferably at least 80%, of the length of the sole.

8. A sole according to claim 1, wherein at least one of its front or rear portions is designed to cooperate with a sports apparatus.

9. A sole according to claim 1, wherein at least one of the front or rear half-soles is constituted by at least one piece for guiding and for connecting to a sports apparatus.

10. A sole according to claim 9, wherein it has, on its lower surface, in the front portion and/or rear portion:

- at least one guiding member, adapted to cooperate with complementarily shaped guiding means provided on a sports apparatus, preferably a gliding support, to which the sole is designed to be coupled; and
- possibly, at least one adherent and wear resisting pad.

11. A sole according to claim 1, wherein the reinforcement is assembled to the front and rear portions of the sole by cementing.

12. A sole according to claim 1, wherein at least one of the front or rear (preferably front) half-soles is duplicate molded on the reinforcement, this duplicate molding being preferably selected from the moldable plastic materials, reinforced or non-reinforced, and having appropriate mechanical qualities for rigidity in the rear portion and flexibility in the front portion.

13. A sole according to claim 12, wherein the front half-sole is duplicate molded on the reinforcement, and wherein the rear half-sole is cemented on the reinforcement.

14. A sole according to claim 1, wherein the reinforcement is made of a composite material.

15. A sole according to claim 1, wherein the reinforcement has a sandwich structure.

16. A sole, wherein the reinforcement has a sandwich structure having a thickness less than or equal to 3 mm.

17. A sole according to claim 1, wherein the reinforcement is a plate covered, at least on one of its surfaces, with at least one compatibility layer, advantageously constituted by at least one synthetic film forming polymer, especially selected from the group including polyamides and/or polyolefines and/or polyurethanes.

18. A sole according to claim 12, wherein the reinforcement is a plate comprising perforations adapted to enable the passage of bridges of molding material(s) connecting the portions of the half-sole located above and beneath the reinforcement.

19. A sole according to claim 1, wherein the front portion comprises at least one element for coupling to a gliding support.

20. A sole according to claim 1, wherein, in the rear portion, the reinforcement has one or several upward extensions, and/or is associated with at least one other reinforcement.

21. A sole according to claim 1, wherein the rear portion forms an integral assembly with a stiffener covering the heel, the rear portion preferably having a different, and even more preferably greater rigidity than that of the stiffener.

22. A sole according to claim 1, wherein the front half-sole, the rear half-sole, the reinforcement, and possible the stiffener, are made of different materials.

23. A sole according to claim 1, wherein it is an outer sole.

24. A sole according to claim 1, wherein it includes one or several recesses provided at least in its lower surface and showing a portion of the reinforcement.

25. A method of manufacturing a sole according to claim 1, said method comprises:

- using a plate adapted to be the reinforcement of the sole and having a form corresponding substantially to the form of the projection, on a plane, of a human foot placed on this plane;

- assembling (by cementing, riveting, or duplicate molding) the reinforcement to a front half-sole to obtain an intermediate piece.

26. A method of manufacturing the sole according to claim 25, wherein the assembly, obtained by duplicate molding, the assembly step comprises:

- placing the reinforcement in a mold whose cavity corresponds to the form of the front and/or rear (preferably front) half-sole of the sole;

- possibly placing in the mold at least one element for coupling to a sports apparatus, preferably a gliding support;

- duplicate molding the reinforcement by means of identical or different material(s), preferably different at least for the front half-sole and the rear half-sole;

- extracting from the mold the intermediate piece formed by the reinforcement on which the front half-sole (or the rear half-sole) is duplicate molded.

27. A method according to claim 26, wherein:

- a mold of the front (or rear) half-sole is used in the duplicate molding step;

- the duplicate molding of the front (or rear) half-sole is then undertaken according to the step 3;

- one then retrieves an intermediate piece formed by the reinforcement on which the front half-sole (or the rear half-sole) is duplicate molded.

28. A method of manufacturing the sole according to claim 25, wherein, subsequent to the process, the rear half-sole (or the front half-sole) is fixed on the intermediate piece, for example by cementing.

29. A method according to claim 25, wherein:

- the intermediate piece is placed in a mold of the rear (or front) half-sole;

- the rear (or front) half-sole is duplicate molded;

- the sole comprising the duplicate molded reinforcement is extracted from the mold.

30. A method of manufacturing a boot, especially a sports boot, said method comprising:

- manufacturing an intermediate piece comprising a sole front portion on which a reinforcement is assembled;

- assembling the intermediate piece, preferably by cementing, to an upper portion of the boot (vamp/upper); and

- fixing a rear half-sole (or a front half-sole), preferably by cementing, on the intermediate piece assembled to the upper portion of the boot (vamp/upper).

31. A boot, especially sports boot, wherein it comprises a sole according to claim 1.

32. A boot, especially sports boot, wherein it comprises a sole manufactured by the method according to claim 25.

33. A boot, especially sports boot, wherein it comprises a boot made according to manufacturing method according to claim 30.

34. A boot according to claim 31, adapted to be fixed on a sports apparatus, preferably pertaining to the group including:

- ski boot, in particular cross-country or telemark ski boot;
- cycling shoe;
- roller skate;
- ice skate;
- rowing;
- water ski;
- surf;
- snowboard;
- ski surf;
- wakeboard;
- climbing crampons.

35. A use of the sole according to claim 1.

36. A use of the sole according to the method of claim 25.

37. A use of the sole according to the intermediate piece as defined in claim 25.

38. A use of the sole according to the manufacturing of a boot according to claim 30.